

SF  
P85  
#30

SF Police Bureau

STREET CONNECTIONS AND IMPROVEMENTS

recommended for

THE CENTRAL DISTRICT OF SAN FRANCISCO.

DECEMBER, 1936.

D  
REF  
388.411  
M132r

**5/S**



**DOCUMENTS**

SAN FRANCISCO  
PUBLIC LIBRARY

REFERENCE  
BOOK

Not to be taken from the Library

JUL 15 1996

SAN FRANCISCO PUBLIC LIBRARY



3 1223 04288 3554

REPORT ON  
STREET CONNECTIONS AND DEVELOPMENTS  
recommended for

THE CENTRAL DISTRICT OF SAN FRANCISCO  
prepared for

W. H. WORDEN DIRECTOR

DEPARTMENT OF PUBLIC WORKS - CITY AND COUNTY OF SAN FRANCISCO

by

Miller McClintock -- Traffic Consultant

and

Theodore M. Matson -- Resident Engineer

---

DECEMBER, 1936

THE  
SACRED  
OF THE  
SACRED

THE  
SACRED  
OF THE  
SACRED

THE  
SACRED  
OF THE  
SACRED

THE  
SACRED  
OF THE  
SACRED

THE  
SACRED  
OF THE  
SACRED

D REF 388.411 M132r

McClintock, Miller,  
1894-  
Report on street  
connections and  
1936.

THE  
SACRED  
OF THE  
SACRED

S.F. PUBLIC LIBRARY

3 1223 04288 3554

San Francisco, California  
December 18, 1936

Mr. W. H. Worden, Director  
Department of Public Works  
City and County of San Francisco

Dear Sir:

We take pleasure in submitting to you herewith a report and recommendations regarding certain traffic and street conditions in and near that area commonly known as the central business district.

This report is in line with our duty under our present employment whereby we are charged "to aid in a survey of traffic conditions in the City and County of San Francisco both as existing and as will occur by reason of the completion of the San Francisco-Oakland Bay Bridge and the Golden Gate Bridge and to advise the Director as to necessary changes to be made in existing streets and arteries as well as the creation of new streets and arteries in order to accommodate existing and increasing traffic in the City and County of San Francisco."

Pursuant to this duty we have first turned our attention to the special problems created by the opening of the San Francisco-Oakland Bay Bridge on November 12, 1936, and more specifically to the relation of this structure to the business activities of San Francisco. The bridge traffic has unquestionably added to the problem of traffic congestion in San Francisco though to a much lesser degree than was apprehended by some. As bridge volume increases this congestive influence will also increase and the utility of the bridge structure will be limited thereby.

San Francisco, California  
December 18, 1936

Mr. W. H. Woodson, Director  
Department of Public Works  
City and County of San Francisco

Dear Sir:

We take pleasure in submitting to you herewith a report

and recommendations regarding certain traffic and street con-

ditions in and near that area commonly known as the "Market

Business District."

This report is in line with our duty under our present

employment whereby we are charged to aid in a survey of traffic

conditions in the City and County of San Francisco both as re-

lating and as will occur by reason of the completion of the

San Francisco-Oakland Bay Bridge and the Golden Gate Bridge

and to advise the Director as to necessary changes to be made

in existing streets and avenues as well as the provision of

new streets and avenues in order to accommodate anticipated

increasing traffic in the City and County of San Francisco.

Through this City we have first looked at the

to the various features covered by the opening of the "Market

Business District Bay Bridge on November 15, 1936, and more

specifically to the relation of this structure to the business

activities of San Francisco. The bridge traffic was

very much in the problem of traffic congestion in San Francisco.

Through to a much lesser degree than was anticipated by some, it

is a very serious problem that congestive conditions will also

be caused by the opening of the bridge structure will be limited.

Sincerely,

Very truly yours,  
[Signature]

Mr. W. H. Worden-2

The essential problem goes back far beyond the bridge which has merely served to aggravate street faults which are as old as San Francisco itself. This problem may be stated as the "Market Street crossing problem."

The conclusions and recommendations contained in this report would have been entirely valid if there had been no San Francisco-Oakland Bay Bridge. They are doubly so now for San Francisco is confronted with the dual problem of providing its own central business district with the internal traffic facilities necessary for efficient and normal development, and at the same time of giving this district and all of its parts, maximum accessibility to the great potential volume of buying power made available through the efficiency of the bridge structure.

We desire, Sir, to express our deep appreciation for the complete freedom of operation which has been accorded to us in the preparation of this report. More specifically we desire to thank Mr. John J. Casey, City Engineer, and the members of his staff for their unfailing generosity and helpfulness in every phase of our work, though we must of necessity take full personal responsibility for the conclusions presented.

This report does not presume to solve all of the traffic problems of the central business district nor of the handling of bridge traffic. It does, however, strike at basic faults in the street system, which faults so long

2000年 12月 1日

The assembly produced good results for several days which has nearly caused it to be regarded as a success. This problem may be solved by the "Mental Alertness Problem."

of paper power was available through the efficiency of the  
the paper system, especially in the great potential volume  
and at the same time of giving this character and all of  
the facilities necessary for efficient and normal develop-  
ment for our general business district with the internal  
for San Francisco is concerned with the total picture of the  
no San Francisco District New District. They are doubly so now  
this report would have been entirely valid if there had been  
the Commission and recommendations contained in

It is desired that the Commission should be empowered to express its views upon the various questions of fact and law which may arise in the course of its proceedings. It is also desired that the Commission should be empowered to make such recommendations as it may think fit to the Government.

Mr. W. H. Worden-3

as they exist must limit, control, and condition all other types of relief measures. Our findings are presented with a deep sense of responsibility. It is our earnest hope that they may provide an intelligent guide for your action and that they may warrant the joint support of those public and private interests whose aim is the welfare of all of San Francisco.

Respectfully submitted,

(Signed) Miller McClintock,  
Traffic Consultant.

(Signed) Theodore M. Matson,  
Resident Engineer.

Mr. W. H. Williams

as they exist now, and which all other  
forms of relief measure. Our friends are provided with  
a form of relief measure. It is not certain that  
they will provide an intelligent basis for your action  
and that they may want the joint support of these bodies  
and private individuals whose aid is the object of all of

the friends,

Respectfully submitted,

(Signed) William Williams  
Tactical Committee

(Signed) Theodore M. Nelson  
Political Committee

The San Francisco-Oakland Bay Bridge which was opened to vehicular traffic on November 12, 1936, marks a new era in automobile transportation in the bay region. It has reduced the travel time between Oakland and San Francisco by about fifty per cent, and proportionate savings result in travel time to more distant points. It permits the individual to travel without the annoyance of meeting a schedule and affords constant and immediate service. It displaces the irritation of waiting and travel in crowded confined quarters with the pleasant freedom of the open road. It offers speed and convenience which are commensurate with the modern automobile. It is in fact the realization of an ambition as old as San Francisco.

In order to enjoy these advantages in transportation, approximately \$77,000,000 will have been spent when the bridge finally is completed. A longer bridge never has been built, and this record perhaps will stand for a long time. Such an undertaking never could have been accomplished unless there existed throughout the region a strong community desire for safe, convenient, and speedy travel. Such a desire does not stop or start at the bridge heads; rather it permeates the entire community and already requests, appeals, and demands have been made to increase the facility of travel in San Francisco. The demands for freedom of flow in view of the investment and of the obstacles which have been overcome signify a desire which warrants the most earnest consideration.

The New York Times, London and other papers which were opened  
as mentioned in the New York Times on November 15, 1936, which is now in  
the hands of the Government in the New York Times. It is the intention  
the travel time between London and New York by about  
fifty per cent, and the Government is ready in travel  
time to save at least twenty. It is the intention of the Government to  
travel without the expense of making a schedule and without  
concerns and financial services. In London the intention  
of making and travel is provided without expense with the  
element of the cost of the road. It is the intention of the Government  
to make which are connected with the New York Times.  
It is the intention of the Government to make which are connected with the New York Times.

In order to enjoy these advantages in travel, the Government  
approximately \$77,000,000 will have been spent when the bridge  
finally is completed. A large bridge never has been built  
and this record bridge will stand for a long time. Such a  
understanding never could have been accomplished without the  
experience throughout the world in the construction of bridges.  
safe, convenient, and speedy travel. Such a bridge has been  
built or built at the bridge house, which is the intention of the Government.  
which is the intention of the Government, and the intention of the Government  
has been made to increase the facility of travel in the  
world. The Government of London is now in view of the  
intention of the Government which have been made  
which is the intention of the Government.

THE RELATIONSHIP OF THE BAY BRIDGE TO THE  
CENTRAL BUSINESS DISTRICT.

Because of the importance of the central business district not only to San Francisco but to the entire metropolitan area, special significance has been given to those appeals dealing with connections between the bay bridge and this central retail area. The community habit of entering the central business district by way of the Ferry Building is now disturbed. Increasing numbers of persons are expected to enter the central business district by way of the new bridge. Now, the new bridge will place its load at two points which were formerly quite strange to the average person crossing the bay. Instead of arriving in San Francisco at the Ferry Building, (or perhaps at the foot of Hyde Street), those who use the bay bridge will find themselves entering the city by way of the First Street ramp, which connects with First Street at Harrison Street, or by way of the Fifth Street ramp, which places one in the street system of San Francisco at Fifth and Harrison Streets. A new community habit thus will be formed. The importance of properly guiding and shaping this habit of community travel is of tremendous though unevaluated effect to the central retail area. This is evidenced by the facts set forth in a report entitled "How Will the Bridges Affect San Francisco," which was made for the San Francisco Examiner. This survey shows that women shoppers coming to San Francisco will increase their trips by automobile by 54%, and that retail and entertainment travel by way of the San Francisco-Oakland Bay Bridge will increase from 50 to 60

THE RELATIONSHIP OF THE SAN FRANCISCO DISTRICT

Review of the importance of the district business district  
the city of San Francisco and to the entire metropolitan area,  
special significance has been given to these aspects dealing with  
connections between the city and the entire metropolitan area.  
The community basis of the district business district  
by way of the Ferry Building is now discussed. The  
numbers of persons are expected to reach the district business  
district as one of the new bridges. Now, the new bridge will  
place the area at two points which were formerly quite distant  
to the business district operating the way. Instead of driving in  
San Francisco at the Ferry Building, (or persons at the 1900  
of West Street), those who use the new bridge will find them-  
selves entering the city by way of the Third Street Tunnel, which  
connects with First Street at Market Street, at the end of the  
Third Street Tunnel, which places one in the district business  
the connection of First and Market Streets. A new community  
basis will be formed. The importance of this new community  
and again this basis of community travel is of tremendous  
importance and effect to the entire district. This is  
evidenced by the fact that there is a report entitled "The  
the District of San Francisco" which was made for the  
San Francisco Commission. This survey shows that there are some  
for to San Francisco will increase their trips by automobile  
by 100, and that there will be considerable travel by way of the  
San Francisco-Oakland and Golden Gate bridges will increase from 50 to 100.

per cent.

The Central Business District.

The central business district of San Francisco may be approximately defined as the area bounded by California Street, Grant Avenue, and Bush Street on the north; Taylor and Sixth Streets on the west; Mission Street on the south; and, of course, by the waterfront on the east. Large numbers of persons whose convenience will be served by using the bay bridge will find this area as their origin or destination, because within this area is conducted the greater part of the retail, financial, and other commercial activity of the metropolitan district.

The arrangement of streets in this area is indeed unique among American cities. (See Figure 1) Market Street is by far the most important street in the entire area. It is wider than any other street in the area, and has long held sway as the principal artery of traffic and transportation throughout this district. Lying at the southern edge of the district it distinctly marks the change in street pattern and business activity. The block development south of Market Street is laid out in lines perpendicular to and parallel with Market Street, and the blocks themselves are of unusually large proportions, averaging 825 by 550 feet. On the other hand, the street pattern north of Market Street is rotated so as to lie at obtuse and acute angles to Market Street. The blocks in this area are one-quarter the area of the blocks south of Market Street. Intercommunication between the area north of Market Street and south of Market Street is seriously retarded because the intersections formed by



# LAND USE

IN VICINITY OF  
THE CENTRAL BUSINESS DISTRICT  
AND  
THE S.F. OAKLAND BAY BRIDGE

PREPARED FOR  
THE DEPARTMENT OF PUBLIC WORKS  
BY  
THE TRAFFIC AND TRANSPORT ASSOCIATES  
MILLER MC CLINTOCK DIRECTOR

- LEGEND
- COMMERCIAL
  - LIGHT INDUSTRIAL
  - HEAVY INDUSTRIAL
  - SECOND RESIDENTIAL

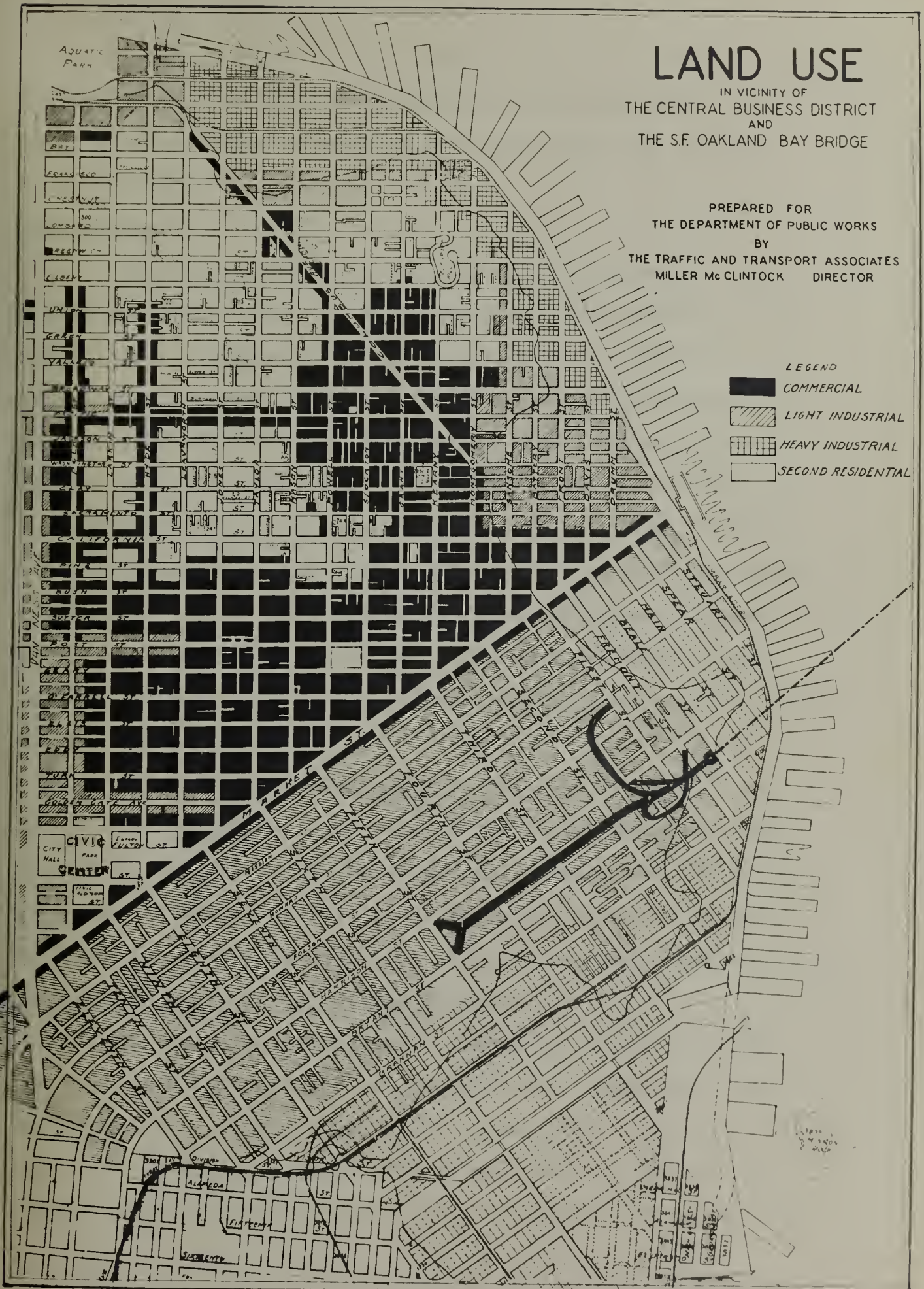


FIGURE 1



the two systems of block development are most irregular and because a large number of streets from the north side dead end at Market Street.

#### Topography.

The topography of this section of San Francisco has had a profound effect upon the development of the commercial areas. Nob Hill has stood majestically as a barrier to commercial expansion to the north of Market Street. The crest of Nob Hill is less than one half mile in a direct line from Market Street, and the slopes of the street system become extremely steep not more than 1200 feet distant from Market Street. Yet directly between the crest of Nob Hill and Market Street the most intense retail district in the metropolitan area has been developed. Reference to Figure 1, which shows commercially zoned areas, clearly indicates how retail business has sought the lower levels and the flatter slopes.

Under these circumstances it would be natural to expect that retail trade and other high land value occupancies would have sought the level and strategically located area lying to the south of Market Street, so as to form a balanced pattern of trade activities on each side of San Francisco's "Main Street".

#### Inherent Weakness in the Street Pattern.

The failure of the street system to adequately serve the central business district has long been recognized. Even before the day of large numbers of automobiles, when San Francisco was in ruins, serious efforts were made to improve the street system. Because of the "rush to get back to business",



the efforts which were made at that time generally were unsuccessful, and regret frequently is expressed at the failure of these earlier attempts toward improvement.

The failure of the street system perhaps can best be illustrated by the general popular recognition of the difficulty of pedestrian and vehicular crossings of Market Street. As a direct result of this difficulty popular attention has been concentrated on Market Street itself. Yet paradoxically enough Market Street, as previously pointed out, has been the primary artery of transportation. The failure of the street system does not lie in Market Street itself. Rather it is the failure of numerous streets north of Market Street to have a continuity across this area. Between Van Ness Avenue and the waterfront, a distance of about two miles, there are 36 streets forming 18 junctions on the north line of Market Street, yet there are only 12 possible vehicular crossings of Market Street in this distance. In other words, on only one street out of three does the traveler find himself in line to cross Market Street. Of the 18 streets which enter Market Street from the south, only 12 cross Market Street, or in two cases out of every three does the traveler find himself on a street which will carry him directly across Market Street. With such a condition prevailing it is only natural that there must result a confusion in the minds of street users. Either through a lack of planning of routes in advance, or by necessity, there is imposed upon this congested area an unnecessary and undue amount of travel and turning. It is difficult to establish accurately the amount of unnecessary travel and unnecessary turning movement which takes

The first of these is the fact that the...  
...and the second is the fact that the...  
...the third is the fact that the...

The second of these is the fact that the...  
...and the third is the fact that the...  
...the fourth is the fact that the...

The third of these is the fact that the...  
...and the fourth is the fact that the...  
...the fifth is the fact that the...

The fourth of these is the fact that the...  
...and the fifth is the fact that the...  
...the sixth is the fact that the...

The fifth of these is the fact that the...  
...and the sixth is the fact that the...  
...the seventh is the fact that the...

The sixth of these is the fact that the...  
...and the seventh is the fact that the...  
...the eighth is the fact that the...

The seventh of these is the fact that the...  
...and the eighth is the fact that the...  
...the ninth is the fact that the...

The eighth of these is the fact that the...

place daily in this area which is suffering from congestion. It can be clearly demonstrated that the motorist who finds himself in the second block north of Market Street between Van Ness Avenue and Sansome Street, and who wishes to cross Market Street to a point directly opposite must travel on an average about 1750 feet, whereas a direct crossing would require only 1200 feet. In other words, a motorist crossing Market Street must travel nearly one and one half times as far as he would ordinarily travel if he had the advantage of direct crossing. This, of course, produces an unnecessary and unwarranted load on the street system. Aside from this unnecessary burden which is imposed on the street system, there is, of course, annoyance and irritation to the motorist who is confronted with the problem of crossing Market Street. If the motorist knew that regardless of what street he was on north of Market Street, or south of Market Street, he could cross to the other side directly, he could undertake such crossing without confusion and with efficiency.

Another failure of the street system which is not nearly so apparent but which analysis shows is none the less important is the inadequacy of the streets south of Market Street to provide block areas and lot development which are adaptable to intensive land use. The blocks south of Market Street are too large for efficient business activity. Business frontage in relation to land area is very low. What might readily result from a more efficient street system is illustrated by the classical case of New Montgomery Street, which divides the block between



Second Street and Third Street south of Market Street into smaller block areas. The development on New Montgomery Street would have been impossible without the more efficient land division produced by New Montgomery Street itself.

#### PRINCIPLES TO BE FOLLOWED

San Francisco is a part of the bay region. It is the most important part in that it is the center of financial and wholesale activity for the entire western coast. It is the retail center for the metropolitan area, and its retail activity to a large degree is influenced by the bay region. As the metropolitan area grows and prospers, the central business district of San Francisco should grow and prosper.

#### Accessibility.

The value of the central business district of any city as a place to do business is definitely influenced by the accessibility of that district to its natural buying power. The San Francisco-Oakland Bay Bridge is a great potential asset to retail activities in San Francisco because it increases the accessibility of these activities to a very large volume of high grade buying power. Seventy-seven million dollars was not considered too great a price to pay for this facility which will save the average transbay traveller approximately twenty-six minutes in travel time. If fully successful the bridge structure will not merely transfer travel from the ferries to its own roadway but will actually generate millions of annual trips to San Francisco by those heretofore not regular customers. The



success of the bridge depends primarily upon its capacity to save time to the traveller. This time savings is estimated at twenty-six minutes for each trip. If this saving in time were dissipated, either through conditions upon the bridge itself or from any other causes wholly apart from the bridge, the utility of the structure as an economic force would disappear. Conversely anything that can be done to add a minute or a fraction of a minute to time saving will enhance its economic service.

The value of the bridge might readily be destroyed through inconvenience and congestion in the street system of the city. The maximum utility of the bridge and the maximum utility of the central business district of San Francisco are unquestionably dependent upon the street system which joins them. The preservation of existing values and indeed the normal increase and spread of these values are definitely influenced by the free and convenient circulation of persons by all methods of transportation. Unless the average person finds freedom to go where he wishes, when he wishes, with minimum delay and by routes which are direct to his destination, the attractiveness of the central district is reduced and in proportion to the degree of inconvenience encountered.

#### Cost of Accessibility.

Any measure designed to improve accessibility must have a balance between the net cost of such measure and the accessibility which such measure provides. Expedients which are cheap may serve very well for a little while, but in the final analysis may prove to be very costly indeed. Any designed improvement in



accessibility should in so far as practicable make provisions for immediate appreciation of value and a minimum depreciation of values. The long range view of development must be kept constantly in mind, and finally the actual cost of proposed improvements must be compared with the cost of the basic structures which they will serve, maintain, and enhance. Measures which are designed to improve vehicular traffic conditions must be weighed in relationship to other transportation improvements, and finally it must be recognized that the mere movement of vehicles, and other carriers, per se, does not accomplish the ends of transportation. Without terminal facilities, carriers and routes are of themselves of little value.

ORIGINS AND DESTINATIONS IN SAN FRANCISCO  
OF THE  
SAN FRANCISCO-OAKLAND BAY BRIDGE TRAFFIC

In order to determine the importance and influence of the San Francisco-Oakland Bay Bridge vehicular traffic to the street system of the central business district, analysis has been made of the origin and destination of traffic in San Francisco which will use the bridge.

Based upon a field study made by the California State Highway Commission during the week of May 15-21, 1936, analysis of the distribution of traffic to and from the bridge was carried out by the firm of Coverdale and Colpitt, and the origins and destinations of traffic flow, together with the relative amount of traffic each district receives and discharges from the bridge,



# ORIGIN AND DESTINATION

IN

SAN FRANCISCO

OF THE

SF-OAKLAND BAY BRIDGE

VEHICULAR TRAFFIC

JULY 1936

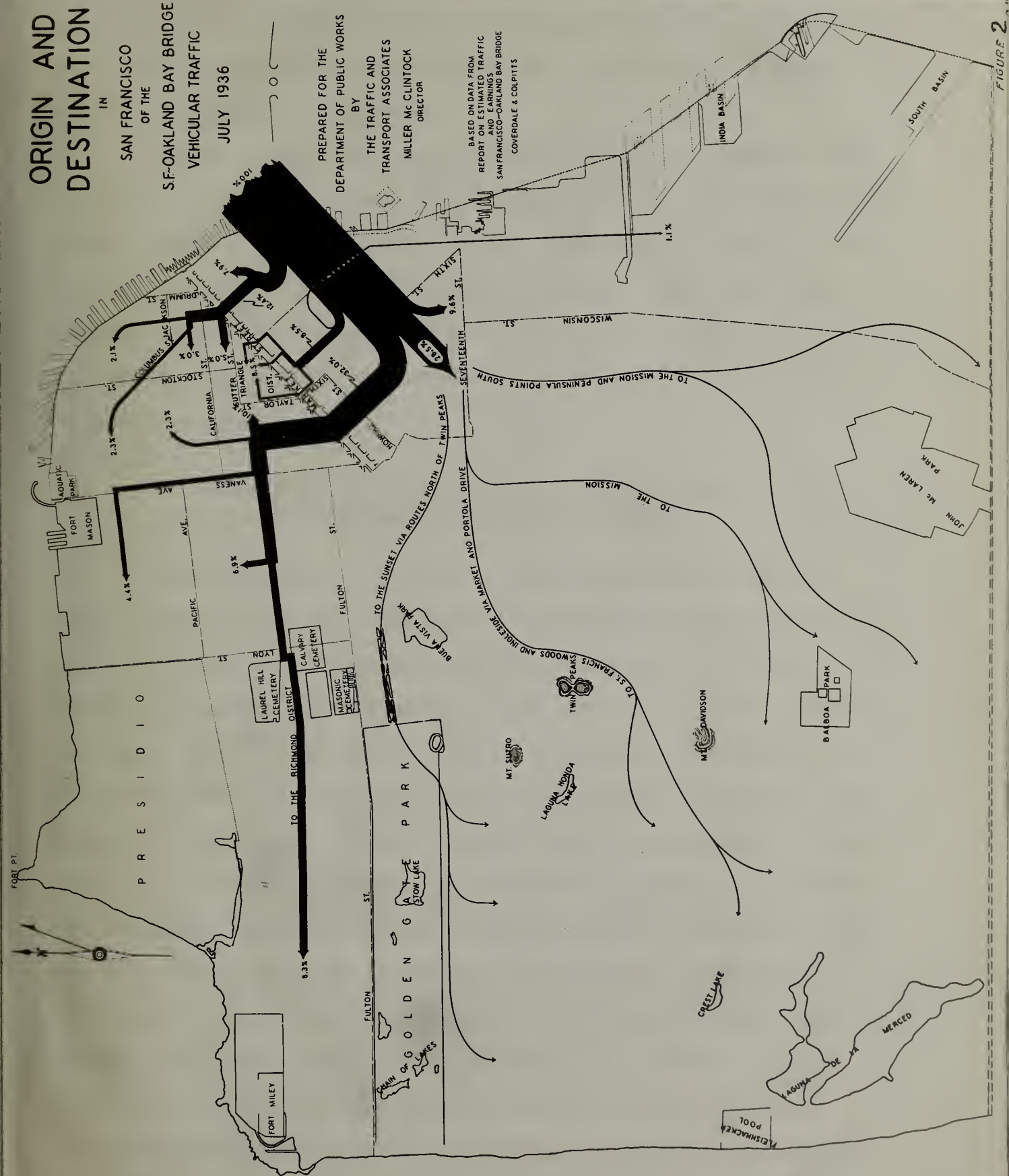
PREPARED FOR THE  
DEPARTMENT OF PUBLIC WORKS

BY

THE TRAFFIC AND  
TRANSPORT ASSOCIATES

MILLER MC CLINTOCK  
DIRECTOR

BASED ON DATA FROM  
REPORT ON ESTIMATED TRAFFIC  
AND EARNINGS  
SAN FRANCISCO-OAKLAND BAY BRIDGE  
COVERDALE & COLPITTS





was set forth in their "Report on Estimated Traffic and Earnings San Francisco-Oakland Bay Bridge". The result of this study is graphically shown in Figure 2.

Study of the chart shows that approximately 20% of the traffic will enter or leave the bridge by way of the First-Fremont Streets ramps. The remainder of the traffic will enter or leave the bridge by way of the Fifth Street Plaza. The study shows further that over one half of the flow on the bridge will find it either necessary or convenient to cross Market Street east of Van Ness Avenue.

GROWTH OF VEHICULAR TRAFFIC BETWEEN SAN  
FRANCISCO AND THE EAST BAY AREA

The analysis of origins and destinations, which has already been discussed, indicates the distribution in San Francisco of present day vehicular traffic which will use the bridge. Conservative estimates of the growth of traffic which have been carried out by the firm of Coverdale and Colpitt in their "Report on Estimated Traffic and Earnings San Francisco-Oakland Bay Bridge", indicate steady and constant growth in the trend of vehicular traffic. It is expected moreover that with the inauguration of the bridge service, that an additional induced load over present trends of approximately 2,000,000 vehicles per year can be expected. (See Figure 3) Even the minimum condition which can be expected in so far as bridge traffic is concerned; that is, the reduction of ferry tolls to approximately one half of the bridge tolls, will place on the street system of San Francisco at the bridge heads, by the year 1939, approximately 6,000,000 vehicles per year. With the

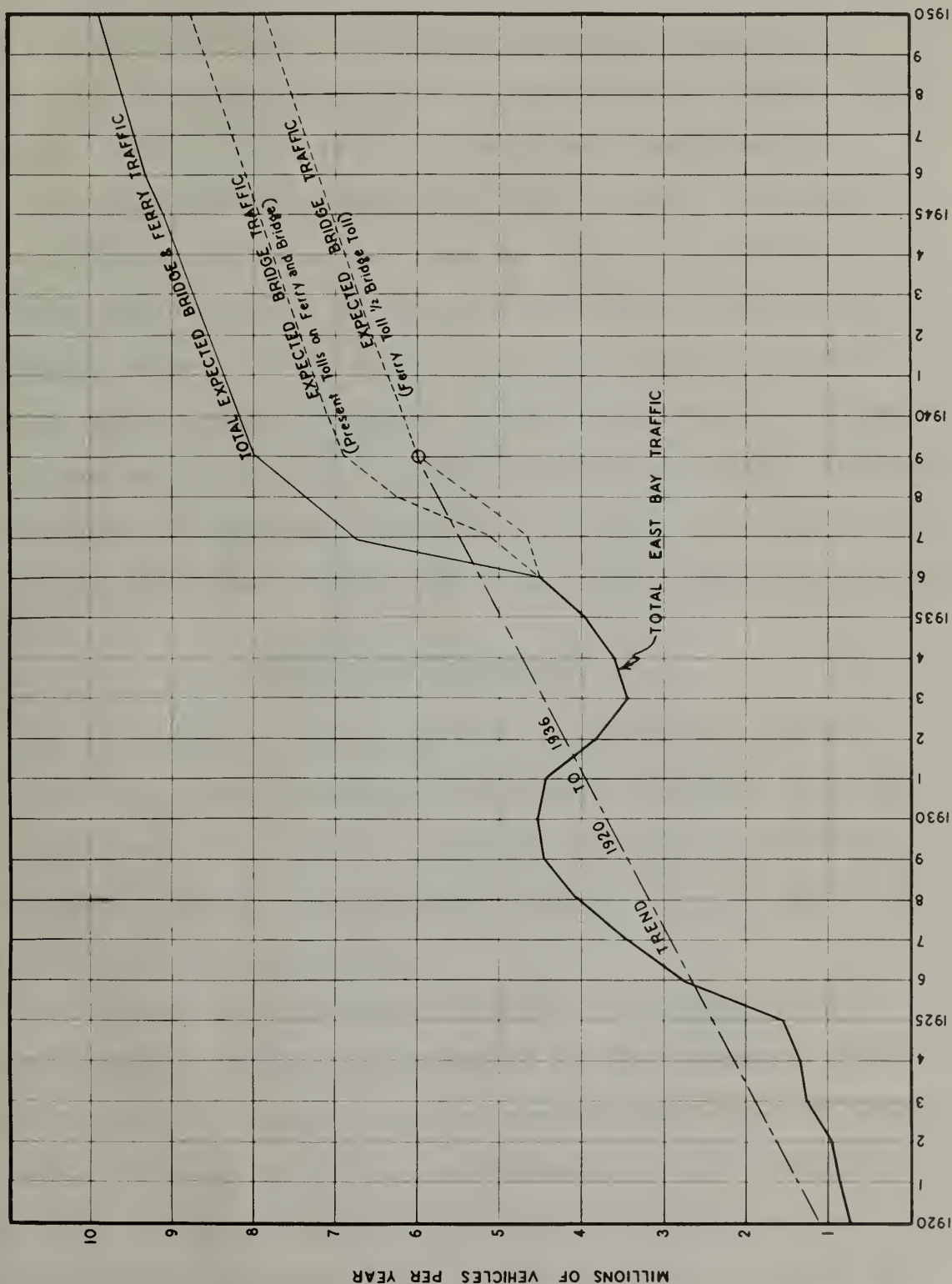


# VEHICULAR TRAFFIC GROWTH IN

## BETWEEN SAN FRANCISCO AND EAST BAY AREA

PREPARED FOR  
THE DEPARTMENT OF  
PUBLIC WORKS  
BY  
THE TRAFFIC AND  
TRANSPORT ASSOCIATES  
MILLER Mc CLINTOCK  
DIRECTOR

BASED ON DATA  
FROM  
COVERDALE  
&  
COLPITTS



YEAR

FIGURE 3



present toll structures on both facilities prevailing, it is expected that transbay trends will be assumed at a higher level of 7,000,000 vehicles per year. It will be noted from the chart, that the combined bridge and ferry traffic is expected to reach 8,000,000 vehicles per year by 1939, and that this figure will grow to nearly 10,000,000 vehicles per year within the following decade. Thus it is seen that vehicular traffic conditions are not static but even at most conservative estimates San Francisco must plan for increasing numbers of motor vehicles, and the problem of handling street traffic will become especially severe in the downtown district adjacent to the transbay crossings.

#### TRAFFIC FLUCTUATIONS

It is commonly understood that traffic flows are not steady, but that they fluctuate from month to month, from day to day, and from hour to hour. In order better to understand the influence of these fluctuations, analysis of them has been prepared and set forth in Figure 4.

Based upon data obtained from the California State Railroad Commission concerning transbay traffic movement there is set forth the variations from the average flow by each month of the year. It will be noted that February is the month of minimum flow, and that August is the peak. On the basis of a million vehicles per year, the average month would carry approximately 83,333 vehicles. A typical February is 13.82% below this average, and a typical August is 10.02% above this average, so that for every million vehicles using the bridge,



# TRAFFIC FLUCTUATIONS

PREPARED FOR THE DEPARTMENT OF PUBLIC WORKS

BY

THE TRAFFIC AND TRANSPORT ASSOCIATES

MILLER McCLINTOCK DIRECTOR

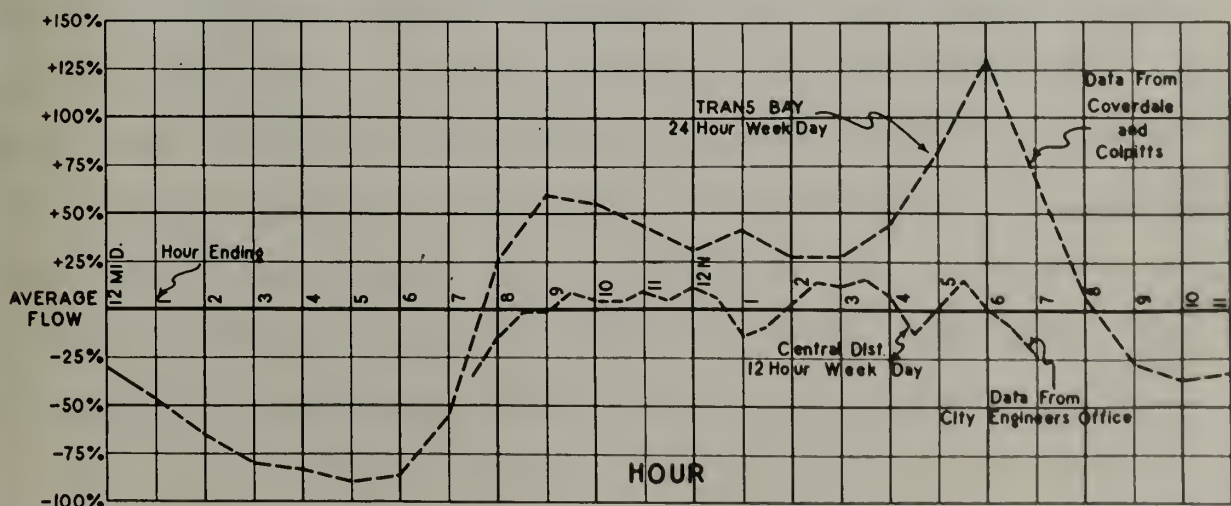
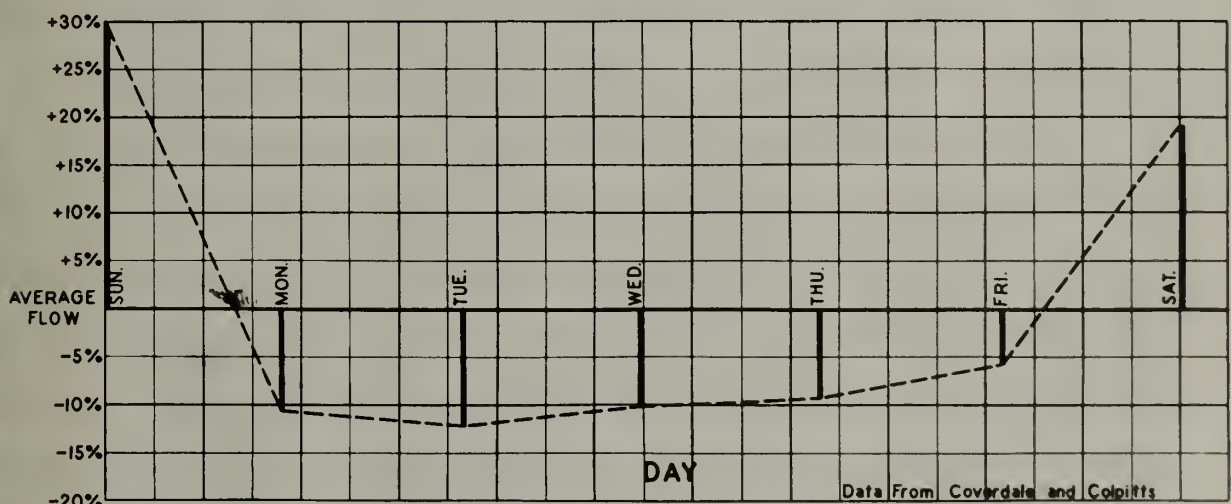
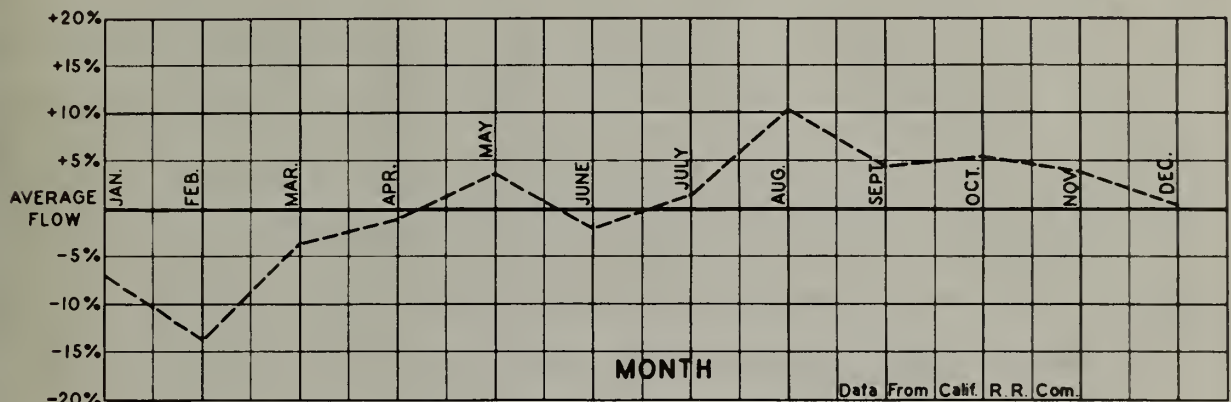


FIGURE 4



the month of August should deliver approximately 97,000 vehicles. Similarly, the week shows even more marked fluctuations in traffic flow. Analysis of the data set forth in Coverdale and Colpitt's "Report on Estimated Traffic and Earnings San Francisco-Oakland Bay Bridge", it is found that a typical Sunday is 29.9% above the average week day; whereas, the minimum flow is found on Tuesday, and is 12.32% below the average day. Thus, in a peak month of August, for each million vehicles per year, it can be expected that over 97,000 vehicles will use the bridge, the average August day would carry approximately 3200 vehicles. Sunday, however, is approximately 30% above this average day, and on atypical Sunday in August there can be expected between 4000 and 5000 vehicles per day. On Friday, which is the highest of the midweek days, over 3000 vehicles will be expected to cross the bridge per million vehicles per year. Again, on an hourly basis, even greater fluctuations in traffic flow will be noted. Thus the hour ending at five o'clock A.M. shows the traffic flow to be nearly 90% below the average hour for a day; whereas, for the hour ending at six o'clock P.M. experience indicates that the traffic flow is approximately 132% above the average hour for the 24 hour period. Present unofficial peak hour counts indicate that the total flow in both directions on a normal business day is approximately 1600 vehicles. Of course any exceptional holiday travel will more than double this flow. It is apparent to any student of the traffic problem that



# MARKET STREET TRAFFIC FLOWS

PREPARED FOR THE DEPARTMENT OF PUBLIC WORKS

BY

THE TRAFFIC AND TRANSPORT ASSOCIATES

MILLER McCLINTOCK DIRECTOR

STREET CAR FLOW  
BASED ON DATA FROM  
THE OPERATING COMPANIES  
TWENTY-FOUR HOUR PERIOD  
NOVEMBER 1936

VEHICULAR FLOW  
BASED ON DATA FROM  
THE CITY ENGINEERS OFFICE  
TYPICAL WEEK DAY JUNE 1936  
9 AM TO 12.30N - 2 PM TO 5.30PM

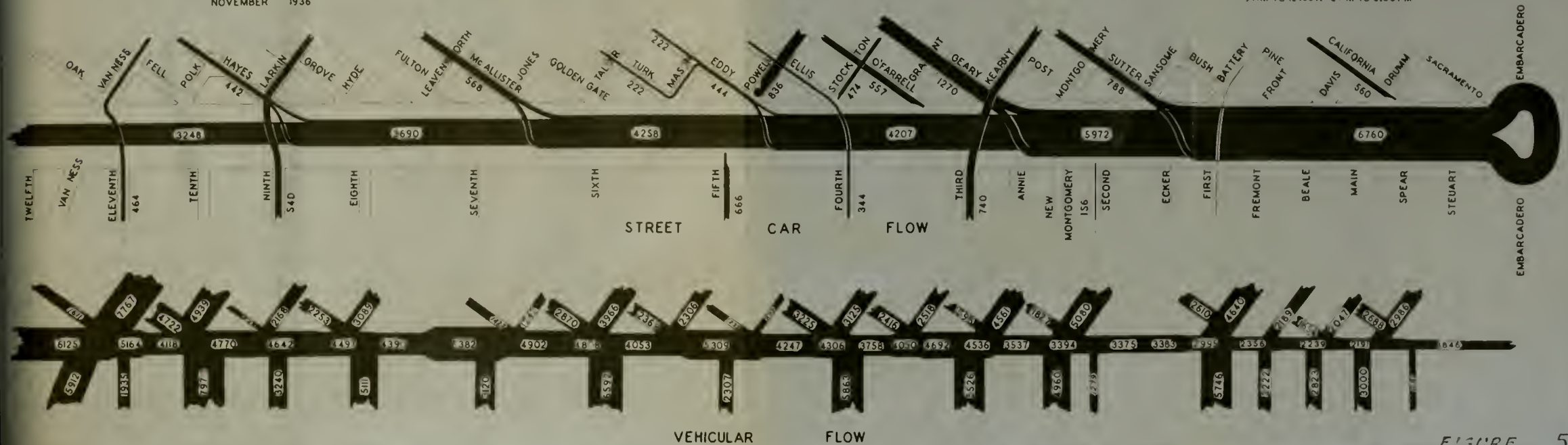


FIGURE 5

present various countries within limits of 1000 ft.  
 various various countries in my personally seen cases. This  
 limited number is not included in the number of  
 other species if there is a lot of it already seen before.

street car traffic is reduced, the vehicular traffic flows have been found to be increased, so that regardless of which point we wish to cross Market Street we are confronted with extremely heavy movement of street cars or other vehicles. Regardless of what intersection is chosen on Market Street and because of the importance of transit movements on Market Street, it is apparent that Market Street flows must be given a considerable portion of the right of way either by signal or by officer, so that the minor percentage of time for cross traffic flow is left to accommodate the movements north and south.

Analysis of present signal cycle division on Market Street and the proportion of time which officers allot to Market Street when the signals are taken over by manual control, indicates that cross traffic movements are allotted only  $1/4$  to  $1/3$  of the full time. Hence the theoretical capacities of cross streets must be reduced approximately 75%.

#### MARKET STREET CROSSINGS

As has been previously brought out, Market Street and the crossings thereon are of unique importance in connection with the movement of traffic from the bridge into the central district and the movement of traffic north and south through the central district. The irregularity caused by the junction of the street pattern north of Market Street with the street pattern south of Market Street on the line of Market Street has previously been set forth. Further analysis of this ir-



regularity and the difficulties it imposes on traffic movement is set forth in Figure 6.

It will be noted from the diagram that 28 streets converge on Market Street between First Street and Van Ness Avenue. On a line two blocks north of Market Street vehicles are diagrammatically shown on the chart. The shortest and best course for these vehicles to reach a point on Mission Street directly opposite is also indicated. The effective distance covered by these vehicles is approximately 1200 feet, yet the minimum actual distance travelled will approximate 1450 feet, the maximum distance travelled is 2450 feet, and the average distance is 1750 feet. Thus it is clearly demonstrated that a vehicle wishing to cross from a point on Mission Street to a point directly opposite, or vice versa, must travel on the average approximately one and one half times as far as would be required if such movement could be made on a direct line. Hence the district in the vicinity of Market Street must accommodate  $1\frac{1}{2}$  vehicles miles for every effective vehicle mile used in crossing Market Street. This, of course, throws an unwarranted burden on the street system in the central district.

Because of the irregularity caused by the junction of the two street patterns, the diagram shows also that 28 streets from the north of Market Street must converge into 8 existing crossings on Market Street. Likewise, between First Street and Van Ness Avenue there are 12 flows from the south which must converge on the same 8 crossings northbound. The result of this characteristic produces unwarranted concentration of flows



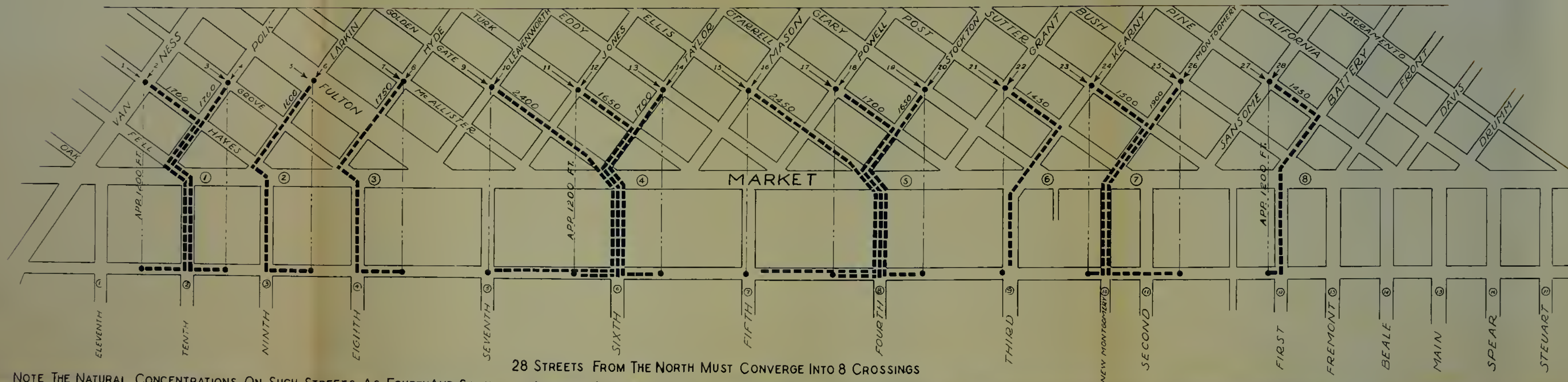
# MARKET STREET CROSSINGS

PREPARED FOR THE DEPARTMENT OF PUBLIC WORKS

BY

THE TRAFFIC AND TRANSPORT ASSOCIATES

MILLER McCLINTOCK DIRECTOR



28 STREETS FROM THE NORTH MUST CONVERGE INTO 8 CROSSINGS

NOTE THE NATURAL CONCENTRATIONS ON SUCH STREETS AS FOURTH AND SIXTH ~ AVERAGE CROSSING DISTANCE IS NEARLY 1 1/2 TIMES STRAIGHT LINE DISTANCE ~ THE LONGEST PATH IS FROM MASON & ELLIS TO FIFTH & MISSION



crossing Market Street. This concentration frequently has been noted in other studies of the transportation problems of San Francisco. Thus in 1936, in a report of the Public Utilities Commission of San Francisco, entitled "Rapid Transit for San Francisco," the authors in speaking of the street systems in downtown San Francisco refer to the Market Street crossing problem by stating: " ..... there are only three or four satisfactory crossings on Market Street. Crosstown traffic is concentrated at these crossings creating long delays in the movement of all traffic on both Market Street and the cross streets."

Again, in another study of San Francisco by the City Engineer in 1931, in a report entitled "Rapid Transit Plans for the City of San Francisco," in discussing the street pattern for south of Market Street says: "The large size of the blocks formed by the major streets has without doubt worked very materially against the development of the district south of Market Street into a retail or office district, for the reason that the centers of these blocks are practically inaccessible for retail trade and not at all desirable as sites for large office buildings. Consequently this area is at the present time very largely devoted to wholesale business and light manufacturing, whereas the area north of Market Street is occupied by high value retail business and large office buildings. ....

"One indication as to the possibilities of this district



if broken up into smaller blocks, is the marked difference in character of New Montgomery Street compared with the other streets south of Market Street. The distance from Second Street to New Montgomery Street is 281 feet and both of these streets have a considerable amount of the better class of business, New Montgomery Street particularly having several large office buildings, notable among which is the headquarters of the Pacific Telephone and Telegraph Company.

"It therefore seems logical that the breaking up of some of these long blocks by the opening up of reasonably wide streets running at right angles to Market Street, would very materially improve property values in the blocks subdivided. Possibly even the opening of pedestrian arcades through some of these blocks, would considerably more than pay for the cost.

"The spreading out of the retail and office district incident to such a change in the street plan would have a material effect on the transportation system as it would tend to remove the heavy congestion on Market Street and would provide means of diverting some of the traffic across Market Street rather than to confine most of it to traveling the length of Market Street. Careful planning of the location of these streets would also relieve another serious condition brought about by the fact that now at only a few places do the streets north of Market Street come into that thoroughfare opposite streets to the south. This concentrates cross traffic at a few intersections, which interferes with the flow of



Market Street traffic to such an extent as materially to cut down the street capacity. When streets stop at Market Street with no outlet opposite, it either requires that a considerable amount of traffic make a left-hand turn, or prohibits the use of the intersections except when used with a right-hand turn. Traffic on side streets is again increased in order that it may reach an intersection where it can cross.

"These additional streets as well as relieving traffic congestion will provide unloading space, and until such time as parking is entirely prohibited in the downtown area, will make room for many more cars in the business section. In addition to opening some new streets at right angles to Market Street, it would be well while buildings are small and values relatively low, to widen and open through some of the narrower streets parallel to Market Street."

Further, in this same report of the City Engineer, in 1931, in speaking of the mitigation of congestion in the downtown area, he points out the need for additional crossings of Market Street, stating: "The possibility of breaking additional north and south streets through from Howard Street to Market Street has already been touched upon. These streets would have a very appreciable effect on downtown traffic and would no doubt prove beneficial. They would add to the number of crossings of Market Street but would possibly not greatly change the time required to traverse Market Street as at a good many places there are already pedestrian crossings and crossings



for traffic from the north of Market Street. The opening of these additional streets would have a tendency to change the concentration of traffic and would open up considerable territory south of Market Street for a better class of business than now utilizes this portion of the town. A number of interests would no doubt find considerable cause for argument pro and con as to the advisability of opening these new thoroughfares."

It must be recognized that the basic street system in the central business district is a heritage from the past and any measures designed to improve this basic system must take cognizance of this foundation. The degree of perfection attained in correcting this mixture of street patterns so as to better suit modern traffic requirements is definitely limited.

Because of the present inadequate number of crossings the driver of a vehicle wishing to cross Market Street south-bound will, either through necessity or by lack of planning his route in advance, find that he is required to make a number of turning movements in intersections to reach a street which will take him across Market Street. Turning movements are a serious factor in traffic congestion, and in many business districts left turns particularly are prohibited because of the congestion and hazards which they produce. Yet, because of limitations which are imposed by the present streets which must be used, these turning movements are necessitated.



It may be argued that added crossings on Market Street will destroy the utility of Market Street. Such observation is without a sound basis of logic. Because of the present concentration of traffic on the few crossings now existing, the amount of time required for those crossings is proportionately greater than if there were a more uniform spread of the crossing movement into a greater number of crossings. If all cross movement on Market Street were required to cross at a single point an impossible condition would result, for if cross movement were maintained at such single crossing there could be no time available for Market Street to flow. It has been pointed out elsewhere that Market Street is already demanding the major portion of intersection time and relief to Market Street as well as cross traffic can only come through additional crossings of Market Street.

Moreover, as a practical matter of signal coordination to provide progressive movement of traffic along any given artery, it is axiomatic that the degree of uniformity of intersection spacing is a measure of the degree of progressive movement obtainable. It follows, therefore, that with greater uniformity of intersection spacing along Market Street there can be developed a better coordination of signal control for Market Street.

In summary every element appears to lead to the conclusion that more direct crossing should be provided for



Market Street:

1. Smaller blocks will encourage higher class occupancies in the strategically located area to the south of Market Street.
2. There will be a wider distribution of crossing traffic thus relieving crossing congestion and materially facilitating movement along Market Street both for vehicles and street cars.
3. More evenly spread intersections will permit more efficient progressive signal control along Market Street.
4. Useless vehicle mileage will be eliminated to the benefit of the individual motorist and in time this will reduce traffic congestion north of Market Street.
5. Finally irregular routings and turning movements will be reduced and this will further reduce congestion.

SPEED OF TRAFFIC MOVEMENT IN CENTRAL  
DISTRICT WITH PARTICULAR REFERENCE TO  
MARKET STREET CROSSINGS

The present irregularity and inconvenience of Market Street crossings are a far more important consideration than the mere gross capacity of existing streets to carry present or anticipated traffic volumes. Amazingly large volumes of traffic can be carried by streets of comparatively narrow width if one is willing to tolerate the accompanying congestion and inconvenience.

In order to determine the congestion of traffic in the central district at the present time, and particularly the inconvenience of movement across Market Street, certain speed tests were made. The method followed was to drive a vehicle



with observer and recorder in the central district so as to "float" with the various streams of traffic which were tested. All tests were made in the area bounded by First Street, Battery Street, California Street, Grant Avenue, Sutter Street, Taylor Street, Golden Gate Avenue, Leavenworth Street, Seventh Street, and Howard Street. The primary purpose was to make as many crossings of Market Street as were necessary to indicate speed of traffic movement crossing Market Street. However, without stopping the test vehicle during this test, and maintaining movement so as to "float" with traffic, and confining operations entirely within the district defined above, it was found that during the first hour of travel the average movement of traffic in this district was 6.3 miles per hour. The first ten miles of travel required approximately 100 minutes, or an average speed of 6 miles per hour. The second hour of test showed an average speed of 5.2 miles per hour of all traffic which was tested in this district. The average speed maintained during all time spent in this district was found to be 5.75 miles per hour. This is as unfavorable a condition as is shown in the central business district of any American city.

Of the 23 test runs made between First Street and Seventh Street an average speed of less than 5 miles per hour was obtained. It should be borne in mind that all of these tests, with the exception of one crossing on Sixth Street and one crossing on First Street, were made in a normal period of traffic movement, that is on a Monday between the hours of one



and four in the afternoon. Sample runs which were made subsequently confirmed the test runs. These values of speed reflect very conclusively the present congestion on Market Street crossings.

STREET AREAS NORTH AND SOUTH OF  
MARKET STREET

In order to compare the relative capacity to handle traffic in the district north of Market Street as compared with the district south of Market Street, an analysis has been made of the amount of land given over to street use on both sides of Market Street in the vicinity of Market Street. This analysis is graphically set forth in Figure 7. It shows that from 31.4% to 37% of the land north of Market Street is developed as main street thoroughfares, and in the district south of Market Street this figure is approached only east of First Street. Between First and Eighth Streets south of Market, only 21% of the land has been given over to street use; and between Eighth and Eleventh Streets, 24.5% is employed as street area.

Analysis further shows that between First and Eleventh Streets a large percentage of the land has been given over to alleys, whereas north of Market Street the area west of Stockton Street is practically devoid of any alley development. Between Stockton and Sansome Streets there is nearly 6% of the land area given to alley development. There results in the area north of Market Street from approximately 61% to 68% of the land being employed for building development; whereas, in the area south of Market Street the amount of land given over to building development varies from approximately 67% to 70%.

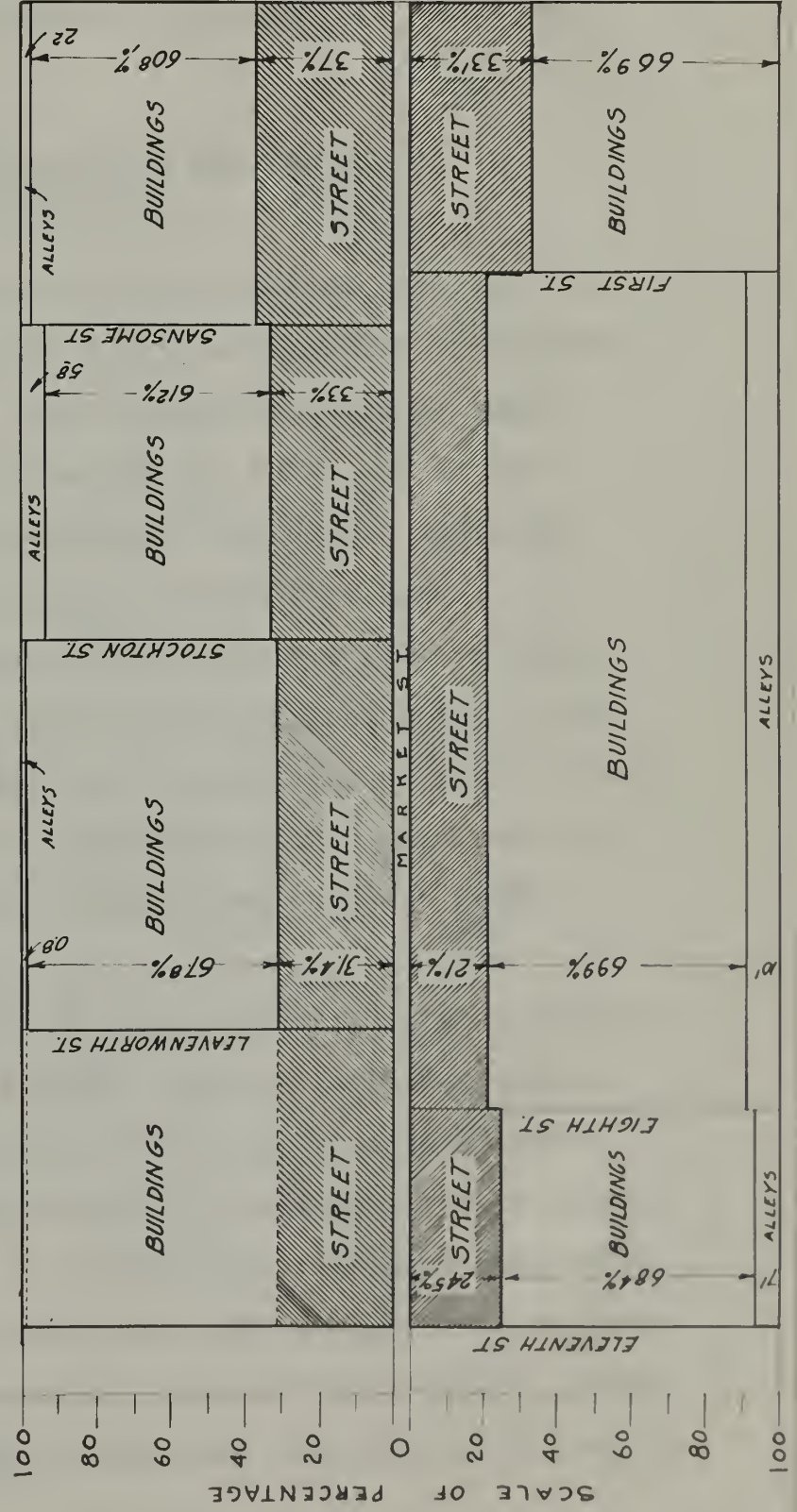


# DISTRIBUTION OF LAND USE

NORTH AND SOUTH OF MARKET STREET

PREPARED FOR  
THE DEPARTMENT OF PUBLIC WORKS

BY  
THE TRAFFIC AND TRANSPORT ASSOCIATES  
MILLER MCCLINTOCK DIRECTOR



THE EMBARCADERO  
▲ SOUTH | NORTH ▲

FIGURE 7



It is obvious, therefore, that in order to match the street capacity north of Market Street more street area should be developed south of Market Street. The advantage which might accrue in added and valuable business frontage has been noted elsewhere.

#### CENTER OF FLOOR AREA IN THE TRIANGLE DISTRICT

Examination of the central district indicates that the primary retail activity is to be found in a natural triangular area north of Market Street. This triangle formed by Sutter Street on the north, Taylor Street on the west, and Market Street on the south, has been analyzed in order to determine the probable distribution of traffic within this area.

It is generally recognized that floor area is a basic factor in so far as traffic requirements are concerned, - that is, it is reasonable to assume that like amounts of retail floor area will produce like amounts of traffic flow. Analysis of the floor area in the triangle district has been set forth graphically in Figure 8.

If any particular part of this triangle district should show a concentration in floor area, it would influence traffic to and from this area as a whole. The actual amount of floor area has been weighed with reference to the district as a whole, and the center of this area is indicated as falling approximately 700 feet south of Sutter Street and 1200 feet east of Taylor Street, or in the block immediately south of Union Square. This establishes the optimum point for delivery and pick up of traffic

It is obvious, therefore, that in order to match the street  
expansive width of Market Street more street area should be  
developed south of Market Street. The advantage which might  
accrue in added and valuable business frontage has been noted  
elsewhere.

### CENTER OF TRUCK AREA IN THE TRIANGLE

Examination of the aerial photograph indicates that the  
presently totally inactive area to be found in a natural triangular  
area north of Market Street. This triangle formed by Taylor  
Street on the north, Taylor Street on the west, and Market  
Street on the south, has been analyzed in order to determine  
the probable distribution of traffic within this area.  
It is generally recognized that floor area is a major  
factor in so far as traffic requirements are concerned - that  
is, it is reasonable to assume that the amount of retail floor  
area will produce the amount of traffic flow. Analysis of  
the floor area in the triangle district has been set forth  
graphically in Figure 6.  
If any particular part of this triangle district should  
show a concentration in floor area, it would influence traffic  
as and from this area as a whole. The actual amount of floor  
area has been related with reference to the district as a whole,  
and the center of this area is indicated as falling approximately  
1500 feet south of Taylor Street and 1200 feet east of Taylor  
Street, or in the block immediately south of Union Square. This  
establishes the optimum point for delivery and also up of traffic

# CENTER OF FLOOR AREAS

IN THE

TRIANGLE DISTRICT

SAN FRANCISCO

PREPARED FOR

THE DEPARTMENT OF PUBLIC WORKS

BY

THE TRAFFIC AND TRANSPORT ASSOCIATES

MILLER MCCLINTOCK DIRECTOR

1936

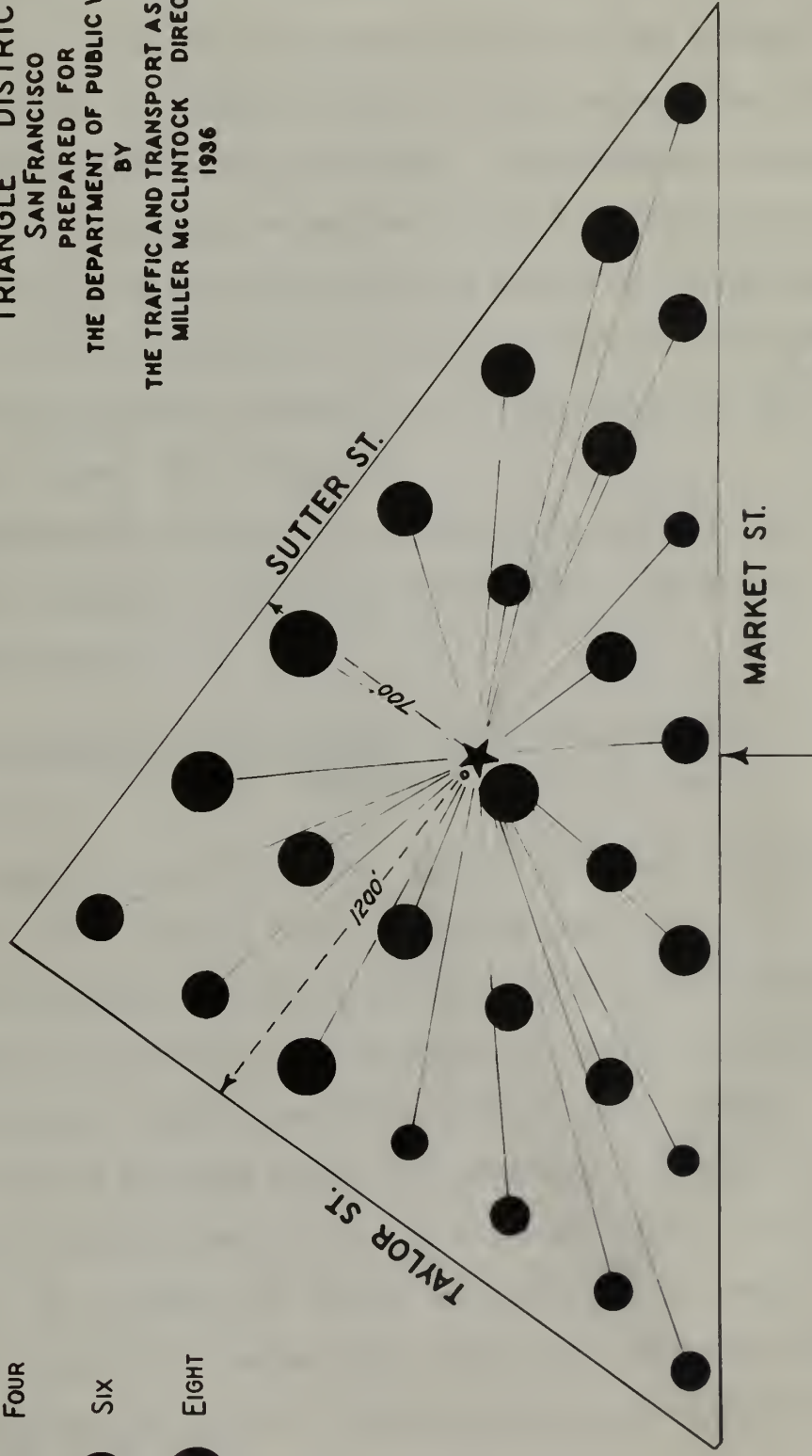
SCALE IN HUNDRED THOUSANDS Sq. Ft.

• TWO

• FOUR

• SIX

• EIGHT



DATA FROM SANBORN INSURANCE ATLAS



to and from this district based on the factor of floor area.

#### CENTER OF ASSESSED VALUATIONS

The value of a piece of property in so far as retail business is concerned is closely allied to its convenience, and assessed valuations reflect accessibility. Accordingly, analysis has been made of the assessed valuations in the triangle district previously described. The center of these assessed valuations has been found to be 675 feet south of Sutter Street and 1318 feet east of Taylor Street, falling in the same block as the centroid of floor area. See Figure 9.

The geographical center is indicated on the chart by the small circle adjacent to the star which marks the center of assessed valuations.

#### THE PRINCIPLE OF CLOCKWISE DISTRIBUTION OF TRAFFIC MOVEMENT

It is impossible to lead all traffic destined for the triangle district to a single point. On the other hand, the centroids which have been established definitely mark a point which would result in the greatest convenience to the greatest number. Furthermore, traffic entering this district should be required to make a minimum number of left turns because of the inconvenience and hazards which are inherent in all left turn movements. If a number of points of entry to and exit from the district are to be made, they should be made so that traffic will flow naturally in a clockwise movement around the

### CENTER OF ASSESSED VALUATIONS

The value of a piece of property in so far as it is obtained is concerned is closely allied to its convenience, and assessed valuations reflect accessibility. Accordingly, analysis has been made of the assessed valuations in the triangle district previously described. The center of these assessed valuations has been found to be 675 feet south of Gutter Street and 1315 feet east of Taylor Street, falling in the same block as the centroid of floor area. See Figure 9.

The geographical center is indicated on the chart by the small circle adjacent to the star which marks the center of assessed valuations.

### THE PRINCIPLE OF CLOCKWISE DISTRIBUTION OF TRAFFIC MOVEMENT

It is impossible to lead all traffic designed for the triangle district to a single point. On the other hand, the circles which have been established definitely mark a point which would result in the greatest convenience to the greatest number. Furthermore, traffic entering this district should be required to make a minimum number of left turns because of the inconvenience and hazards which are inherent in all left turn movements. If a number of points of entry to and exit from the district are to be made, they should be made so that vehicles will flow naturally in a clockwise movement around the

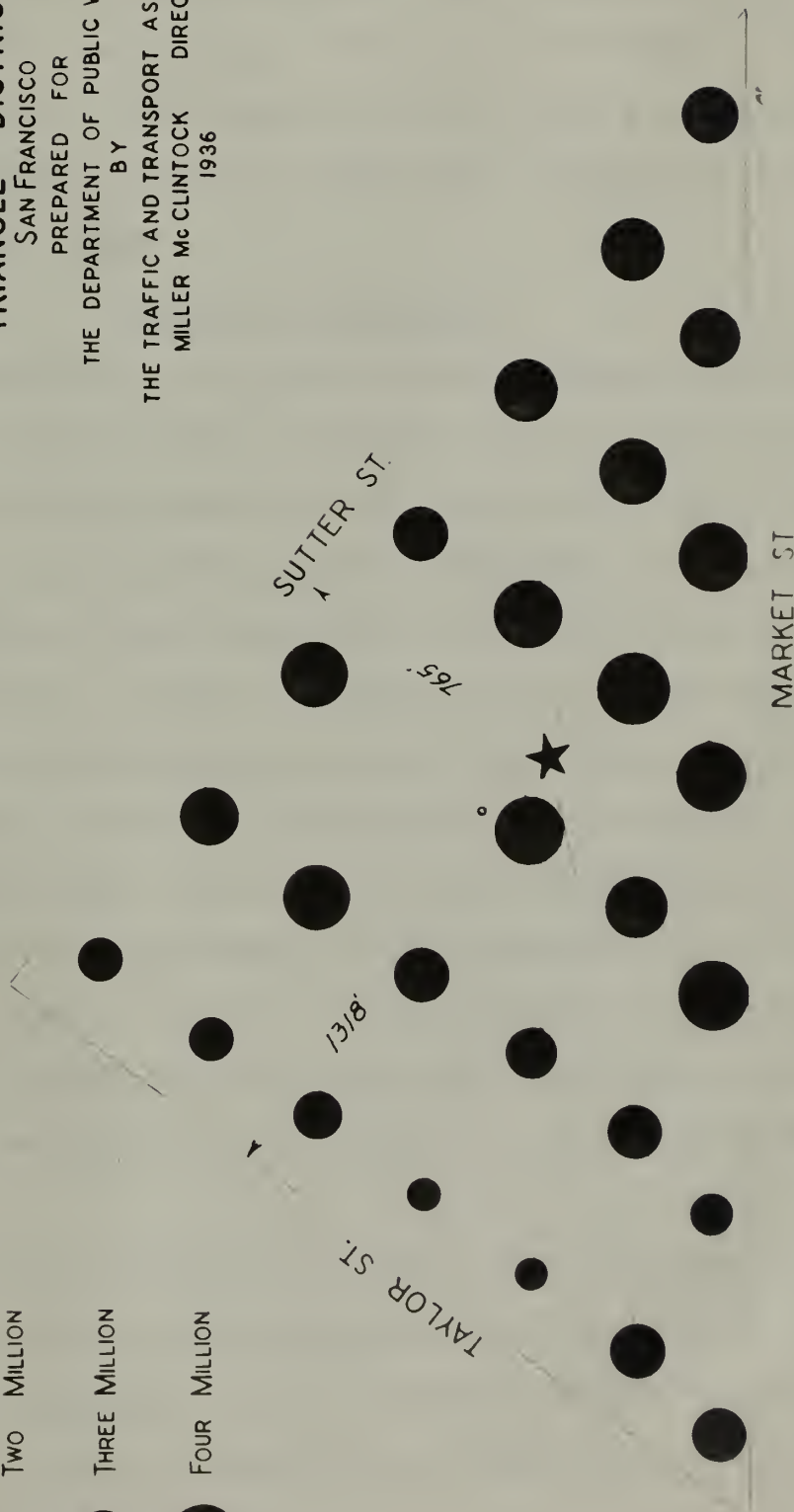
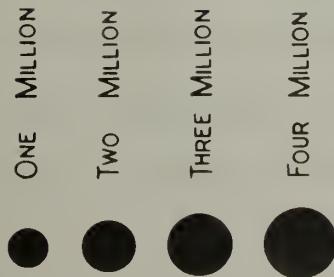
# CENTER OF ASSESSED VALUATIONS

IN THE  
TRIANGLE DISTRICT  
SAN FRANCISCO

PREPARED FOR  
THE DEPARTMENT OF PUBLIC WORKS  
BY

THE TRAFFIC AND TRANSPORT ASSOCIATES  
MILLER MC CLINTOCK DIRECTOR  
1936

## SCALE



DATA FROM 1936 ASSESSMENT ROLL



center. This replaces the hazardous and congesting influence of the left turn with the more efficient right turn. This principle has been followed at many focal points and its efficiency has been proven. Accordingly, any measures designed to improve the accessibility of the central district should be designed so that there naturally results a right-hand movement of traffic about the central point.

### SUMMARY OF FINDINGS

The completion of the San Francisco-Oakland Bay Bridge marks a new era in automobile transportation in the bay region, and signifies a basic demand for the freer use of the automobile. The bay bridge is of great potential importance to the central business district of San Francisco, and especially to the retail shopping district. Evidence indicates that transbay shoppers who will find it convenient to use the bay bridge are expected to increase their visits to San Francisco for shopping purposes by approximately 54%. The value of this central business district is definitely influenced by the accessibility of the district, and particularly the retail district, which represents an investment of \$300,000,000, and which will grow or will blight as the accessibility of traffic be increased or decreased.

The central business district of San Francisco is a unique district in that it has an irregularity of shape which is imposed by the topography, and the irregularity and unusual arrangement of streets north of Market Street, and those south of Market

control. This requires the standard and consistent application of the law with the most efficient results. This principle has been followed at many local points and the efficiency has been proven. Accordingly, any measures designed to increase the responsibility of the central statistic should be designed so that these measures result in a tight-knit movement of traffic about the central point.

### SUMMARY OF FINDINGS

The completed at the San Francisco-Oakland Bay Bridge with a new eye in automobile transportation in the Bay region. and simplified a basic demand for the first use of the automobile. The Bay Bridge is of great potential importance to the central business district of San Francisco, and especially to the retail shopping district. Evidence indicates that business movement will find it convenient to use the Bay Bridge and expected to increase their visits to San Francisco for shopping purposes by approximately 75%. The value of this central business district is definitely influenced by the responsibility of the district, and particularly the retail district, which represents an investment of \$300,000,000, and which will grow as will the responsibility of traffic be increased as shown.

The central business district of San Francisco is a unique district in that it has an irregularity of shape which is the basis of the topography, and the irregularity and unusual character of streets north of Market Street, and these south of Market

Street. It has been established that approximately 50% of the bridge flow will find it either necessary or convenient to cross Market Street in or adjacent to the central business district.

The flows from the bay bridge, like all traffic movement, fluctuate with wide variations. It is estimated that in the future peak days will impose an additional load on the street system of San Francisco amounting to between twenty and twenty-five thousand vehicles. On normal week days at the present time peak hour movement to and from the bridge can be expected to approximate 1,600 vehicles per hour. Present peaks of travel, however, are not fixed. The trend of traffic flow is definitely upward. Conservative estimates of transbay traffic growth indicate that traffic crossing the bay will approximately double itself within the next ten to fifteen years.

Because of the importance of the bridge to the retail district, because of the volume of traffic that is expected to cross Market Street, and because of the irregularity and importance of Market Street itself, the traffic flows crossing Market Street are of vast importance. Present traffic flows on Market Street are demanding approximately 75% of the available time of Market Street intersections, thereby reducing the free flow time for traffic crossing Market Street to 25%. This distribution of intersection capacity cannot drastically be changed without fundamental changes in traffic and transit movements.

Because of the irregularity in the street system, it

It has been established that approximately 50% of the  
flow will find it either necessary or convenient to  
cross Market Street in its approach to the central business  
district.

The flow from the bay district, like all traffic flows,  
varies with wide variations. It is estimated that  
in the future peak days will impose an additional load on the  
street system of San Francisco amounting to between twenty  
and twenty-five thousand vehicles. On normal days there  
are present in the peak hour movement in and from the bay  
and can be expected to approximate 1,500 vehicles per hour.  
Present loads of street, however, are not fixed. The amount  
of traffic flow is definitely varied. Constructive measures  
of increasing traffic growth indicate that traffic crossing  
the bay will approximately double itself within the next ten  
to fifteen years.

Because of the importance of the traffic in the district  
district, business of the volume of traffic that is expected  
to cross Market Street, and because of the irregularity and  
importance of Market Street itself, the traffic flow crossing  
Market Street is of great importance. Present traffic flow  
on Market Street are estimated approximately 75% of the  
available time of Market Street intersections, namely 15-  
hours the year time for traffic crossing Market Street  
to be. This distribution of intersection capacity cannot  
satisfactorily be obtained without fundamental changes in traffic  
and traffic movements.  
Because of the irregularity in the street system, it

is found that 28 streets from the north of Market Street must converge into 8 crossings, between First Street and Van Ness Avenue. Furthermore, due to the irregularity in the street system and its failure to provide continuity of streets across Market Street, the average vehicle in crossing Market Street must travel approximately one and one half times as far as would be required if such movement could be made in a direct line. This imposes an unwarranted burden in the central district where serious turning movements are imposed on traffic crossing Market Street.

The seriousness of the situation is further reflected in the present congestion of movement. Tests indicate that average traffic in the central district is moving at only 6 miles per hour, and that the traffic on those streets which cross Market Street directly between First Street and Seventh Street operates at less than 5 miles per hour.

The spacing of streets in the area north of Market Street is such that the street area in this district is not balanced with the area south of Market Street. From 31.4% to 37% of the land north of Market Street is devoted to street area, whereas, in the district south of Market Street, between First and Eighth Streets, only 21% of the area has been given over to street use.

Analyses of the floor area and assessed valuations and geographical distribution of land in the retail triangle district indicate that the centroids of the triangle district are in the block immediately south of Union Square, and any improvements which can be made to benefit this area should be made so

is found that 22 streets from the north of Market Street west  
converge into 2 streets, between First Street and Van Ness  
Street. Furthermore, one of the streets in the street  
system and the failure to provide continuity of streets  
across Market Street. The various vehicles in crossing Market  
Street must travel independently one and the other street as the  
one would be required to each movement could be made in a  
direct line. This requires an unnecessary burden in the central  
district where various turning movements are required on their  
the crossing Market Street.

The seriousness of the situation is further belated  
in the present condition of movement. These indicate that  
various traffic in the central district is moving in only  
a single way, and that the traffic in these streets which  
cross Market Street directly between First Street and Van Ness  
Street requires at least two or three lanes.

The crossing of streets in the area north of Market  
Street is such that the street line in this district is not  
harmonized with the area south of Market Street. From this to  
the of the land north of Market Street is devoted to street  
use, whereas, in the district south of Market Street, between  
First and Fifth Streets, only one of the area has been given  
over to street use.

Analysis of the first area and assessed valuations and  
geographical distribution of land in the central triangle district  
indicates that the division of the triangle district into  
the block immediately south of Union Square and the triangle  
north which can be used as benefit this area should be made so

as to provide a natural clockwise flow of traffic around these centroids.

### CONCLUSIONS AND RECOMMENDATIONS

Analysis of the factors which affect the movement of traffic between the San Francisco-Oakland Bay Bridge and the central business district leads to the conclusion that bridge flows in themselves are of only incidental importance to the problem of efficient traffic movement in and near the central business district. The same analysis shows that the crossing of Market Street is of significance and importance not only in the handling of traffic between the central retail area and the bridge, but is also of fundamental importance to the efficient handling of traffic throughout the area, and the normal spread and growth of land values in and adjacent to the central business district.

Because of the basic importance of the crossing of Market Street by both pedestrians and vehicles in and adjacent to the central business district there should be provided for every street north of Market Street a direct crossing into the area south of Market Street. Conversely there should be provided for every street entering Market Street from the south a direct crossing into the area north of Market Street.

Without reference to the order of importance or immediate necessity, the following plan of improvements is

as to provide a general picture of traffic around  
these points.

### CONCLUSIONS AND RECOMMENDATIONS

Analysis of the factors which affect the movement of  
traffic between the San Francisco-Oakland Bay Bridge and the  
central business district leads to the conclusion that there  
is an excessive use of this important thoroughfare to the  
problem of efficient traffic movement in and near the central  
business district. The same analysis shows that the crossing  
of Market Street is of significance and importance not only  
in the handling of traffic between the central retail area and  
the bridge, but is also of fundamental importance to the  
efficient handling of traffic throughout the area, and the  
normal speed and growth of land values in and adjacent to  
the central business district.

Because of the basic importance of the crossing of  
Market Street by both pedestrians and vehicles in the adjustment  
to the central business district, there should be provided for  
every street north of Market Street a direct crossing into  
the area north of Market Street. Similarly there should be  
provided for every street entering Market Street from the south  
a direct crossing into the area north of Market Street.

Without reference to the order of importance of the  
various crossings, the following plan of improvements is

proposed. They are shown diagrammatically in Fig. 10.

1. That Sansome Street be connected with Second Street, thereby providing a direct crossing for Sansome Street and Sutter Street with Second Street and greatly enhancing the value of these streets as traffic carriers. Such an improvement would provide tremendous relief for the present congested Montgomery-New Montgomery route. It is recommended that this connection be made by a right angle crossing of Market Street from the junction of Sutter and Sansome Streets and thence into Second Street north of Mission Street, employing the largest possible curve radii.
2. In order to further improve the utility of the Montgomery-New Montgomery crossing, New Montgomery Street should be connected with Hawthorne Street by direct crossing of Howard Street, and by employing maximum curve radii to reach Hawthorne Street, which should be widened and extended to Bryant Street.
3. In order to provide direct crossing of Market Street for O'Farrell Street and Grant Avenue, a new street should be opened midway between Third and Fourth Streets from Market to Bryant Streets, and so arranged as to provide a direct crossing of Market Street.
4. In order to provide a direct crossing of Market Street for Powell Street and Eddy Street, a new street should be opened between Fourth and Fifth Streets on the line indicated in Figure 10.
5. Fifth Street, which at the present time dead ends at Market Street should be provided with a direct crossing of Market Street and thence connected by diagonal route to the intersection of Mason and Eddy Streets.
6. Mason and Turk Streets also should be provided with direct crossing of Market Street, and connected with a new street between Fifth and Sixth Streets, extended as far as Bryant Street.
7. In order to provide a direct crossing of Market Street for Jones and McAllister Streets, direct crossing of Market Street for flows to and from these streets should be provided by a new street

proposed. They are shown approximately in Fig. 10.

1. That Second Street be connected with Second Street, thereby providing a direct crossing for Second Street and better riding with Second Street and thereby increasing the value of these streets as traffic arteries. Such an improvement would provide a thorough route for the present proposed Montgomery-New Montgomery route. It is recommended that this connection be made at a right angle crossing of Market Street from the junction of Butler and Second Streets and thence into Second Street north of Madison Street, employing the latest available plans.
2. In order to further improve the utility of the Montgomery-New Montgomery crossing, New Montgomery Street should be connected with Madison Street by direct crossing of Market Street, and by employing existing curves radii to reach Madison Street, which should be widened and extended to Street Street.
3. In order to provide direct crossing of Market Street for Madison Street and New Avenue, a new street should be opened midway between Third and Fourth Streets from Market to Street Street, and so arranged as to provide a direct crossing of Market Street.
4. In order to provide a direct crossing of Market Street for Third Street and New Street, a new street should be opened between Third and Fifth Streets on the line indicated in Figure 11.
5. Fifth Street, which at the present time runs east at Market Street should be provided with a direct crossing of Market Street and thence connected by diagonal route to the intersection of Second and New Streets.
6. Second and Third Streets also should be provided with direct crossing of Market Street, and connected with a new street between Fifth and Sixth Streets, extended as far as Street Street.
7. In order to provide a direct crossing of Market Street for Second and Madison Streets, direct crossing of Market Street for Third and New Streets should be provided by a new street

# PROPOSED STREET DEVELOPMENT

PREPARED FOR  
THE DEPARTMENT OF PUBLIC WORKS  
BY  
MILLER MCCLINTOCK TRAFFIC CONSULTANT.

CENTRAL RETAIL AREA  
CENTRAID

CIVIC CENTER  
CITY HALL





between Sixth and Seventh Streets, extended as far as Bryant Street.

8. In order to provide a direct crossing of Market Street for Seventh Street, Seventh Street should be extended so as to connect with McAllister Street and Leavenworth Street.
9. In order to provide direct crossing with Leavenworth and Fulton Streets, a new street should be placed between Seventh and Eighth Streets, extended as far south as Bryant Street, and so arranged as to make a direct crossing of Market Street.

#### RECOMMENDATIONS FOR PROPOSED ROADWAY WIDTHS

In connection with all of the above improvements it is recommended that roadway widths be established so as to provide for four free moving lanes and two lanes for parking, with the exception of the New Montgomery Street extension. In the latter case the roadway width needs only to provide for two moving lanes and two parking lanes, so as to have the same capacity as the existing Montgomery-New Montgomery Street roadway.

#### RECOMMENDATIONS FOR MINOR IMPROVEMENTS AND ADJUSTMENTS

- (a) The intersection of First and Market Street should be corrected so that Market Street would be crossed at right angles, and so that First Street will lead into Battery and Bush Streets. This will require an adjustment in the street car crossing of Market Street, some changes in the islands on the north side of Market Street, and relocation of the Mechanics' monument.
- (b) The Third and Kearny Street crossing of Market Street should be changed so as to provide a

between 31st and 32nd Streets, extended  
as far as 31st Street.

8. In order to provide a direct connection of Market  
Street for 31st Street, 31st Street should  
be extended to be in connection with 31st Street  
Street and 31st Street.

9. In order to provide direct connection with  
31st Street and 31st Street, a new street  
should be placed between 31st Street and 31st Street,  
extended as far south as 31st Street, and as  
extended as to make a direct connection of Market  
Street.

RECOMMENDATIONS FOR PROPOSED ROADWAY  
FUTURE

In connection with all of the above recommendations it  
is recommended that roadway width be established as to  
provide for four feet moving lanes and two feet for parking  
with the extension of the New Montgomery Street extension.  
In the latter case the roadway width needs only to be  
for two moving lanes and two parking lanes, as to the latter  
same capacity as the existing Montgomery-New Montgomery Street  
roadway.

RECOMMENDATIONS FOR MINOR IMPROVEMENTS  
AND ADJUSTMENTS

(a) The intersection of 31st and Market Street should  
be continued as that Market Street would be extended  
to 31st Street, and as that 31st Street will lead  
into Market and 31st Street. This will require an  
adjustment in the street car crossing of Market Street.  
Some changes in the islands on the north side of  
Market Street, and relocation of the intersection  
intersection.

(b) The 31st and Market Street intersection of Market  
Street should be changed as to provide a

safety zone and a free flowing lane for automobiles northbound on the south side of Market Street.

- (c) Because of the importance of Stockton Street as a route to the north, and particularly because of the investment represented by the tunnel on Stockton Street to the north, and because of the natural clockwise return to the bridge by way of Fourth Street and its connections, it is highly important to keep the Fourth Street crossing as fluid as possible. It is recommended therefore that at the northeast corner of Stockton and Market Streets the sidewalk area be arcaded within the building line and that the roadway area should be extended to incorporate the existing sidewalk area on the corner.
- (d) Finally the use of important street area for the purpose of trolley switchback, turn-table, and other terminal operations is neither efficient nor tolerable. Such operations should be carried out where they will result in a minimum inconvenience to all street users.

#### RECOMMENDATIONS CONCERNING PARKING AND VEHICLE TERMINAL FACILITIES

It is not within the scope of this report to offer definite recommendations concerning parking and storage of vehicles. However, a full study of this problem is now being planned, inasmuch as the mere movement of vehicles does not accomplish the final ends of transportation.

As new streets are provided in accordance with the recommendations made, there will be created, of course, additional parking facilities. An intensive study of the automobile parking problem in the central business district is to be carried out in the near future in order to arrive at definite conclusions and recommendations concerning treatment of this problem, which is of grave importance to the central district.

along with a few private cars and automobiles  
northward on the south side of Market Street.

(c) The Department of Streets and  
Public Works, and particularly because of the  
investment represented by the tunnel in the  
center of the city, and because of the natural  
obstacles to the bridge by way of Fourth  
Street and the connection, it is highly important  
to keep the Fourth Street approach as wide as  
possible. It is recommended therefore that at  
the north end of the bridge and Market Street  
the sidewalk area be widened within the building  
line and that the roadway area should be expanded  
to incorporate the existing sidewalk area on the  
north.

(d) Finally the use of the tunnel for the  
purpose of vehicle approach, turn-table, and  
other special operations is highly important  
and desirable. Such operations should be carried  
out where they will result in a minimum interference  
to all street users.

RECOMMENDATIONS CONCERNING PARKING AND  
VEHICLE TURNING FACILITIES

It is not within the scope of this report to enter  
into a detailed recommendation concerning parking and stages of  
vehicles. However, a full study of this problem is now  
being planned, inasmuch as the movement of vehicles  
does not necessarily follow the lines of transportation.  
As the streets are provided in accordance with the  
recommendations made, there will be created, of course, additional  
parking facilities. An extensive study of the automobile park  
has been made in the central business district is to be carried  
out in the near future in order to arrive at definite con-  
clusions and recommendations concerning treatment of this  
problem, which is of great importance to the central district.

RECOMMENDATIONS CONCERNING PROGRAM  
OF IMPROVEMENT

The developments outlined above should be undertaken in accordance with a definite financial program. It is recognized that fiscal limitations make the immediate completion of the entire plan impossible, therefore each proposal should be taken up in the order of its importance to the district as a whole.

Fifth Street Extension.

As has been previously pointed out, the centroid of the retail area indicates the general locality demanding earliest improvement, and relief of traffic into the retail area should be undertaken at once.

A direct route from the bridge to the central retail area should be provided immediately. It is recommended that earnest attention be given to the proposal that Fifth Street be extended northerly across Market Street by a diagonal opening to the intersection of Mason and Eddy Streets. The Bridge Authority selected Fifth Street as the logical terminal for the main proportion of the vehicular bridge traffic. Facts produced herein indicate that this was a logical conclusion. However, disregarding the question of logic, the bridge does in fact terminate at Fifth Street. This gives Fifth Street now, and for all time in the future, a particular traffic significance in view of the fact that it makes Fifth Street the only logical and direct route for vehicular traffic to



VICINITY OF FIFTH AND MARKET STS.  
SAN FRANCISCO

Showing Proposed New Street  
Prepared for W.H. Worden, Director  
Department of Public Works  
City and County of San Francisco

BY  
Miller McClinck; Traffic Consultant.

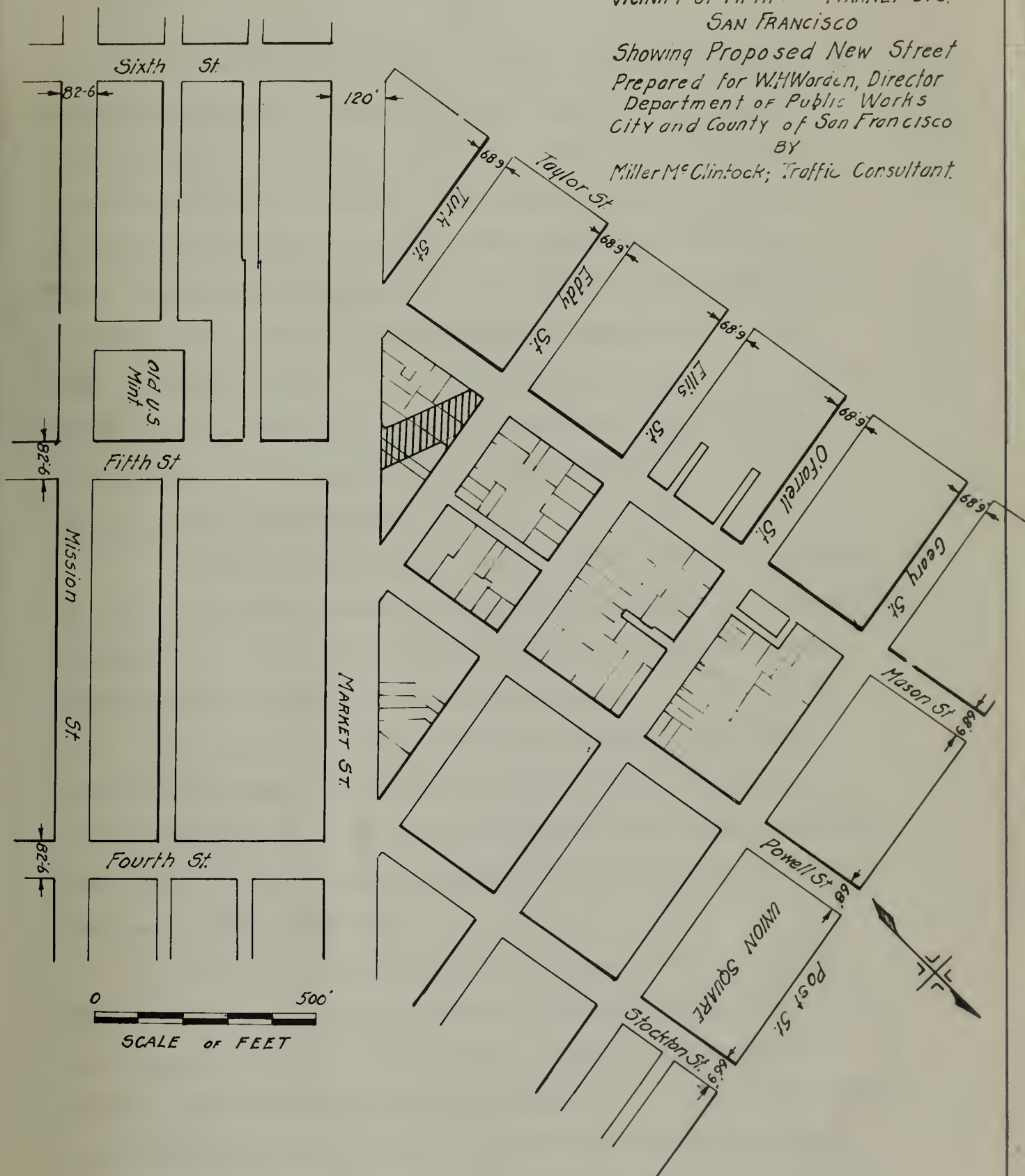


FIGURE 11



follow in entering the central retail area. This direct and logical movement of traffic on Fifth Street is at present frustrated and distorted due to the fact that Fifth Street dead ends at Market Street. A definite obstacle is thrown in the natural path of buying power which has habitually found its normal destination in the central retail area, which includes those retail establishments located on the south side of Market Street. It is of mutual interest to all parts of the retail area that maximum directness, facility, and convenience of trade movements be permitted.

Order of Other Proposals.

The most natural and direct return route to the bridge is by way of the Grant Avenue crossing, and because of the existing congestion in the Fourth-Stockton Streets crossing, prompt relief should be given to this movement.

In order to relieve the New Montgomery and Third Streets crossings, greater use should be made of Second and Sansome Streets as soon as possible, and it follows therefore that the next step in the program would include the Second-Sansome Streets crossing.

In order to gain relief at the outer crossings of Market Street, and because of the existing facility which now is provided for in Seventh Street, a suitable crossing for Seventh Street should be established as soon as possible following the development of the Second-Sansome Streets crossing.

Development of streets between Fourth and Fifth Streets,



Fifth and Sixth Streets, Sixth and Seventh Streets, and then from Seventh to Eighth Streets would seem to be the logical order.

It is expected that land values will continue to increase and while a late start has been made for the improvement of the central business district, the acquirement of all land needed should be pushed forward as rapidly as possible.

Recommendations made for minor improvements involve relatively small amounts and should be undertaken immediately.

It is recognized that the entire program proposed herein will appear to many to be of such scope and cost as to be beyond the ability of the community. It is not the function of this report to present detailed cost estimates of the individual projects proposed for immediate action or for subsequent projects in the plan which may be taken up and accomplished in a period of time. It should be noted, however, that due cognizance has been taken of the probable maximum cost of each improvement, and of the total program, and that these proposals have been made with a feeling of complete confidence that improved traffic conditions, the greater attractiveness of the business district as a center for the retail trade of the metropolitan area, and finally the increased land values which will result will make these improvements a profitable investment.

In considering the entire program recommended herein for ultimate development it should be borne in mind that each and every facility recommended should in principle have been incorporated in the original street plan of San Francisco.

The main factor which has been in view have been the  
 various conditions in the country, social, economic and the  
 situation of these activities and their progress. These factors  
 have been mentioned in the opening of the first volume. There  
 is now a realization that it has been necessary to consider the  
 total potential benefits of the system and related matters  
 as the dominant factor and essential content of the organization  
 and, therefore, the system can only be a product of the  
 country and be based.

27m

